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Enhanced Preliminary Assessment Report:

Franklin Lakes Army Housing Units Franklin Lakes, New Jersey



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Argonne National Laboratory has conducted an enhanced preliminary assessment of the Army housing property located in Franklin Lakes, NJ. The objectives of this assessment include identifying and characterizing all environmentally significant operations, identifying areas of environmental contamination that may require immediate remedial actions, identifying other actions which may be necessary to resolve all identified environmental problems, and identifying other environmental concerns that may present impediments to the expeditious sale of this property. *Keywords: Hazardous
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CONTENTS

SUMMARY	1
1 INTRODUCTION	3
1.1 Authority for the PA	3
1.2 Objectives	4
1.3 Procedures	5
2 PROPERTY CHARACTERIZATION	6
2.1 General Property Information	6
2.2 Description of Facility	6
2.3 Property History	10
2.3.1 Nike Defense Program and Typical Battery-Level Practices	10
2.3.2 Franklin Lakes Housing Units	12
2.4 Environmental Setting and Surrounding Land Use	12
2.5 Geologic and Hydrologic Settings	12
3 ENVIRONMENTALLY SIGNIFICANT OPERATIONS	14
3.1 Underground Fuel-Storage Tanks	14
3.2 Transformers	14
3.3 Asbestos	14
3.4 Utility Connections with Former Fire-Control Area	14
4 KNOWN AND SUSPECTED RELEASES	15
5 PRELIMINARY ASSESSMENT CONCLUSIONS	16
6 RECOMMENDATIONS	17
REFERENCES	18
APPENDIX: Photographs of Franklin Lakes Housing Facility and Surrounding Land	21

FIGURES

1 Location Map of New Jersey Army Housing Facilities	7
2 Vicinity Map of Franklin Lakes Army Housing Units	8
3 Site Plan Map of Franklin Lakes Army Housing Units	9

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SUMMARY

The Franklin Lakes (or Ramsey) housing area in Bergen County, N.J., does not present an imminent or substantial threat to human health or the environment. There is no evidence to suggest that hazardous or toxic constituents have ever been released from this property, and no immediate remedial actions are warranted for the site. Nevertheless, several potential environmental problems have been identified at this facility, and further investigation is recommended.

This property was originally developed in conjunction with a Nike missile battery located near the towns of Franklin Lakes and Ramsey, N.J. No record exists of any wastes associated with the operation and maintenance of the missile-launch and fire-control systems having been delivered to or managed at this housing property. Potable water and sewage treatment service are currently provided by facilities located on the housing site. These facilities also probably provided utility service to the battery's former fire-control area, adjacent to the housing area. The possibility exists of missile-related contaminants migrating along buried water and sewage lines from the former fire-control area to the housing area, particularly since the fire control area lies above the housing area.

Underground heating oil tanks, located at each housing unit on the property, represent another environmental concern. Although there is no documentation of reported failures of or suspected leaks from any of these tanks, real property records indicate that the tanks are more than 30 years old; no records indicate that they were installed with cathodic protection, protective coatings, or other corrosion-prevention measures. Each tank may be at or near the end of its effective life, and leakage from at least some of them is possible.

Electrical service at the Franklin Lakes housing area is provided by a local public utility, but on-site transformers are owned and maintained by the U.S. government. These transformers are not routinely inspected for possible leakage, and they have never been tested for possible inclusion of polychlorinated biphenyls (PCBs). The potential for PCB contamination of soils and groundwater from transformer leaks or spills is therefore a concern, although no such spills or leaks were apparent during the site inspection.

The original floor tile used in these housing units is believed to have contained asbestos. In recent years, the old flooring has been systematically replaced whenever a change of tenant occurred, but the possibility exists that original flooring is still present in a few of these units. In addition, a flexible woven sleeve suspected of containing asbestos was found connecting the furnace exhaust vent with the sheet metal vent leading to the chimney in one of the units. The sleeve was found to be in good condition.

Prior to release of this property, the following actions are recommended:

- Remove and replace underground fuel-storage tanks at all units on the property, sampling soils in all portions of the tank excavations to identify possible areas of contamination; remediate any problems found.

- Test the contents of on-site transformers, as well as the soil at the base of transformer poles, for the presence of PCBs; label contents of the transformers; remediate any contamination problems as required.
- Test soil along the underground water and sewer lines for the presence of missile-related contaminants that may have migrated along the lines from the former fire-control area to the housing area.

These recommendations assume that this property will most likely continue to be used for residential housing.

1 INTRODUCTION

In October 1988, Congress passed the Defense Authorization Amendments and Base Closure and Realignment Act, Public Law 100-526. This legislation provided the framework for making decisions about military base closures and realignments. The overall objective of the legislation is to close and realign bases so as to maximize savings without impairing the Army's overall military mission. In December 1988, the Defense Secretary's ad hoc Commission on Base Realignment and Closure issued its final report nominating candidate installations. The Commission's recommendations, subsequently approved by Congress, affect 111 Army installations, of which 81 are to be closed. Among the affected installations are 53 military housing areas, including the Franklin Lakes housing area addressed in this preliminary assessment.¹

Legislative directives require that all base closures and realignments be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA). As a result, NEPA documentation is being prepared for all properties scheduled to be closed or realigned. The newly formed Base Closure Division of the U.S. Army Toxic and Hazardous Materials Agency is responsible for supervising the preliminary assessment effort for all affected properties. These USATHAMA assessments will subsequently be incorporated into the NEPA documentation being prepared for the properties.

This document is a report of the enhanced preliminary assessment (PA) conducted by Argonne National Laboratory (ANL) at the Army stand-alone housing area near Franklin Lakes, N.J.

1.1 AUTHORITY FOR THE PA

The USATHAMA has engaged ANL to support the Base Closure Program by assessing the environmental quality of the installations proposed for closure or realignment. Preliminary assessments are being conducted under the authority of the Defense Department's Installation Restoration Program (IRP); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 91-510, also known as Superfund; the Superfund Amendments and Reauthorization Act of 1986, Public Law 99-499; and the Defense Authorization Amendments and Base Closure and Realignment Act of 1988, Public Law 100-526.

In conducting preliminary assessments, ANL has followed the methodologies and procedures outlined in Phase I of the IRP. Consequently, this PA addresses all documented or suspected incidents of actual or potential release of hazardous or toxic constituents to the environment.

In addition, this PA is "enhanced" to cover topics not normally addressed in a Phase I preliminary assessment. Specifically, this assessment considers and evaluates the following topical areas and issues:

- Status with respect to regulatory compliance,
- Asbestos,
- Polychlorinated biphenyls (PCBs),
- Radon hazards (to be assessed and reported on independently),
- Underground storage tanks,
- Current or potential restraints on facility utilization,
- Environmental issues requiring resolution,
- Health-risk perspectives associated with residential land use, and
- Other environmental concerns that might present impediments to the expeditious "excessing," or transfer and/or release, of federally owned property.

1.2 OBJECTIVES

This enhanced PA is based on existing information from Army housing records of initial property acquisition, initial construction, and major renovations and remodeling performed by local contractors or by the Army Corps of Engineers. The PA effort does not include the generation of new data. The objectives of the PA include:

- Identifying and characterizing all environmentally significant operations (ESOs),
- Identifying property areas or ESOs that may require a site investigation,
- Identifying ESOs or areas of environmental contamination that may require immediate remedial action,
- Identifying other actions that may be necessary to address and resolve all identified environmental problems, and
- Identifying other environmental concerns that may present impediments to the expeditious transfer of this property.

1.3 PROCEDURES

The PA began with a review of Army housing records at Fort Dix, N.J., during the week of August 7-11, 1989. Additional information was obtained by telephone from the Army Corps of Engineers District Office in New York, N.Y., on August 11, 1989, and from conversations with personnel from the Directorate of Engineering and Housing (DEH) and the Department of Family Housing, Fort Dix, during the period August 7-10. A site visit was conducted at the Franklin Lakes housing facility on August 9, 1989, at which time additional information was obtained through personal observations of the ANL investigator. The interior of one unit (203) was examined. Photographs were taken of the housing units and surrounding properties as a means of documenting the condition of the housing units and immediate land uses. Site photographs are appended. ANL investigators revisited the property on September 9, 1989, at which time the interiors of all of the units were inspected.

All available information was evaluated with respect to actual or potential releases to air, soil, and surface and ground waters.

2 PROPERTY CHARACTERIZATION

2.1 GENERAL PROPERTY INFORMATION

The Franklin Lakes housing area is located in northern New Jersey, near the towns of Franklin Lakes and Ramsey, in western Bergen County. The property occupies 10.56 acres, set within surrounding woodland sparsely interspersed with residential areas.² The 1980 populations of Franklin Lakes and Ramsey were 8,769 and 12,899, respectively.³ Land at least partly surrounding the housing area was originally occupied by the fire-control area of the Franklin Lakes Nike battery. This land, upgradient of the housing area, was declared excess in 1971. No records or documentation of any environmental problems or any sampling or testing associated with the former fire-control area were found. Current usage of this land is described in Sec. 2.4.

Figures 1 and 2 show the general location of the housing facility.²

The housing units were built in 1958.² In addition to 24 dwellings, a pumphouse, water tank, and sewage-treatment plant were erected on the property. The Army Corps of Engineers district office in New York City is responsible for major renovations or upgrading within the Franklin Lakes housing area.

2.2 DESCRIPTION OF FACILITY

Figure 3 presents the site plan of the Franklin Lakes housing area.

Housing Units

The Franklin Lakes housing area consists of 24 "Capehart"-style houses, each with three bedrooms, a family room, carport, and storage room.⁴ Capehart is the model name assigned to these houses by the builder, National Homes. The houses are built on concrete slabs. Water lines and air conditioning ducts are embedded in the foundation slab.

Utilities

Since development of the property, the housing units have been supplied with drinking water from a well located on the housing area property.² In all likelihood the same facility supplied water to the Nike battery fire-control area, when it was active. The Fort Dix DEH has had the responsibility for providing potable water to the housing units since the initial construction in 1958.² Because of the increasing costs of operating this remote well, the DEH is currently negotiating a connection of the Franklin Lakes housing area to the Mahwah Township municipal water system.^{5,6} The property receives electricity from a local public utility, but on-site telephone poles and transformers are the responsibility of the Army.^{5,6}

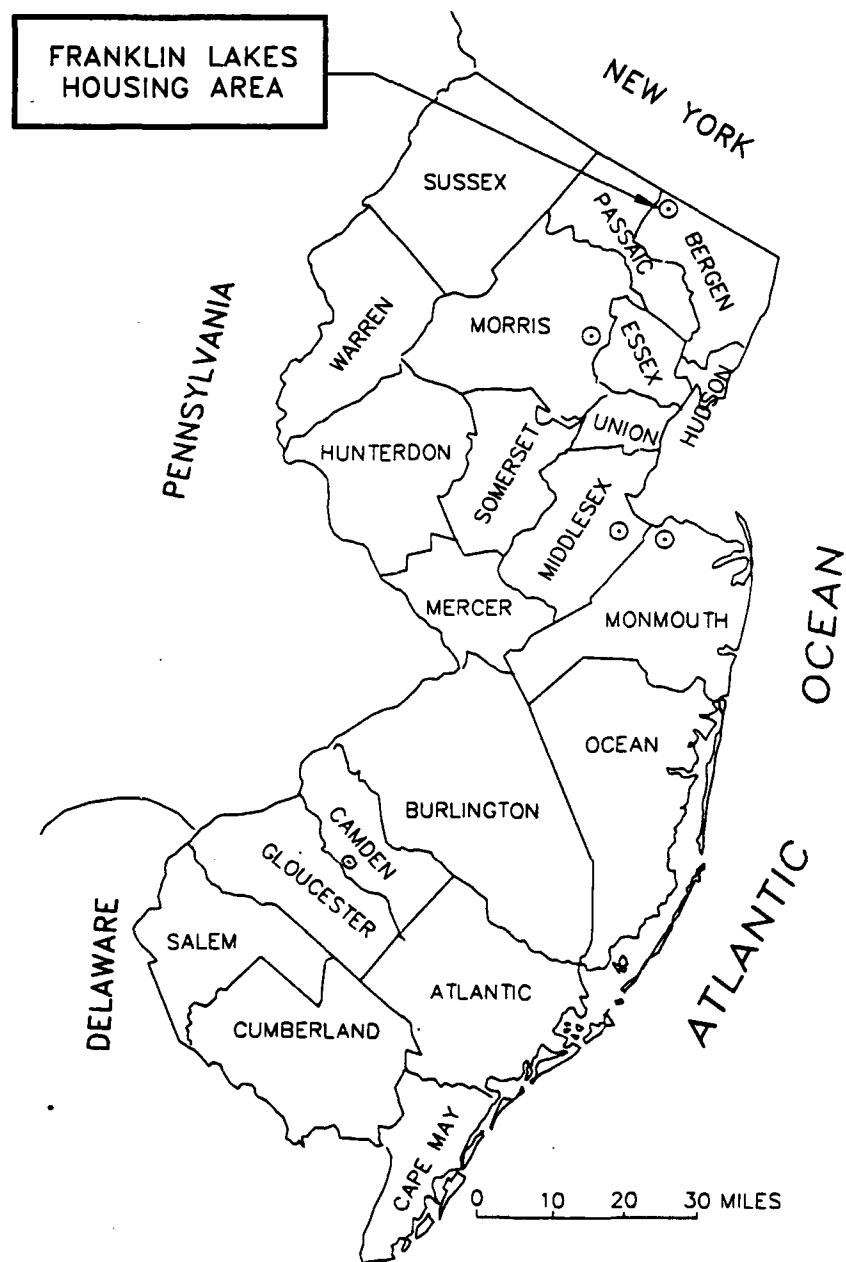


FIGURE 1 Location Map of New Jersey Army Housing Facilities

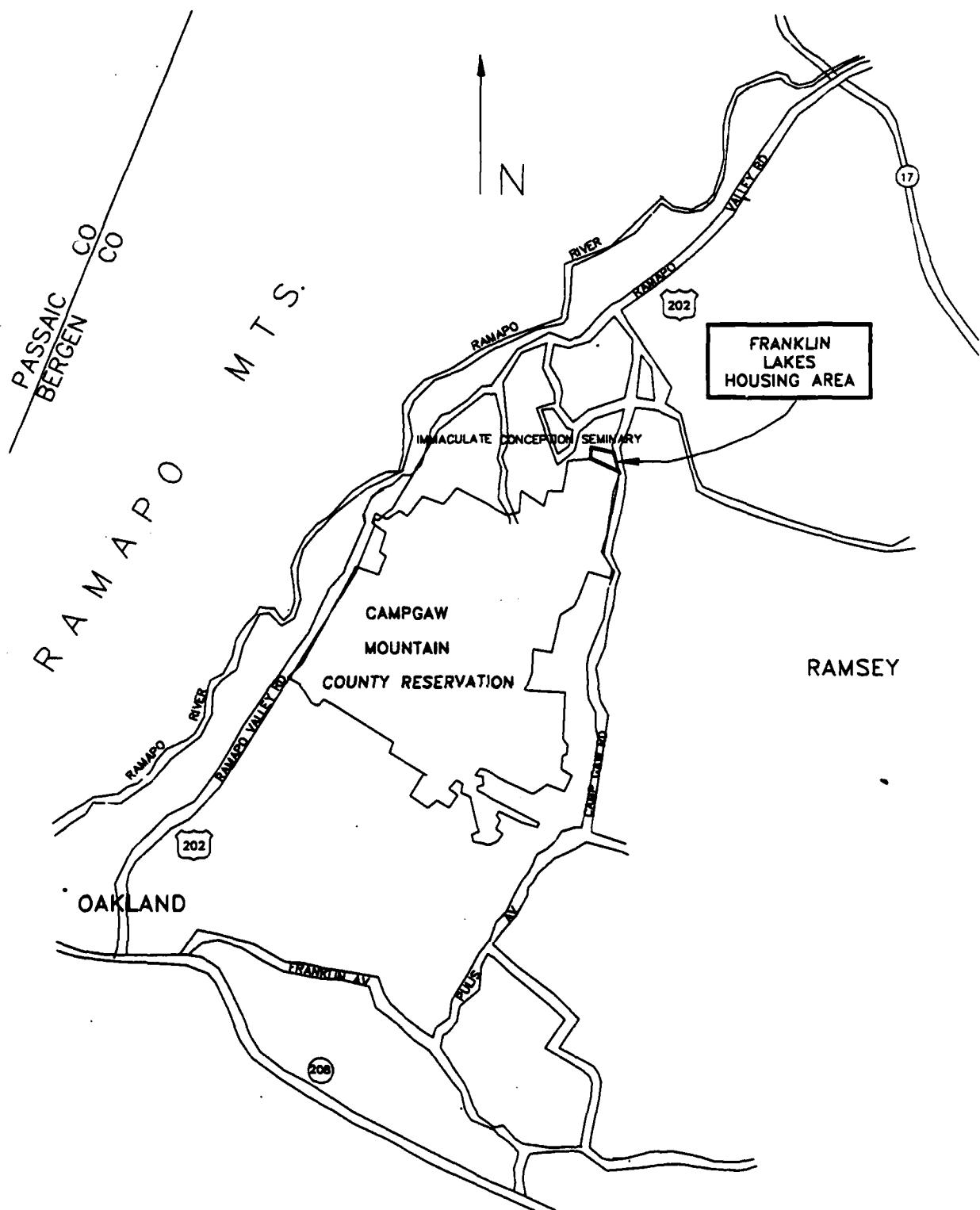


FIGURE 2 Vicinity Map of Franklin Lakes Army Housing Units

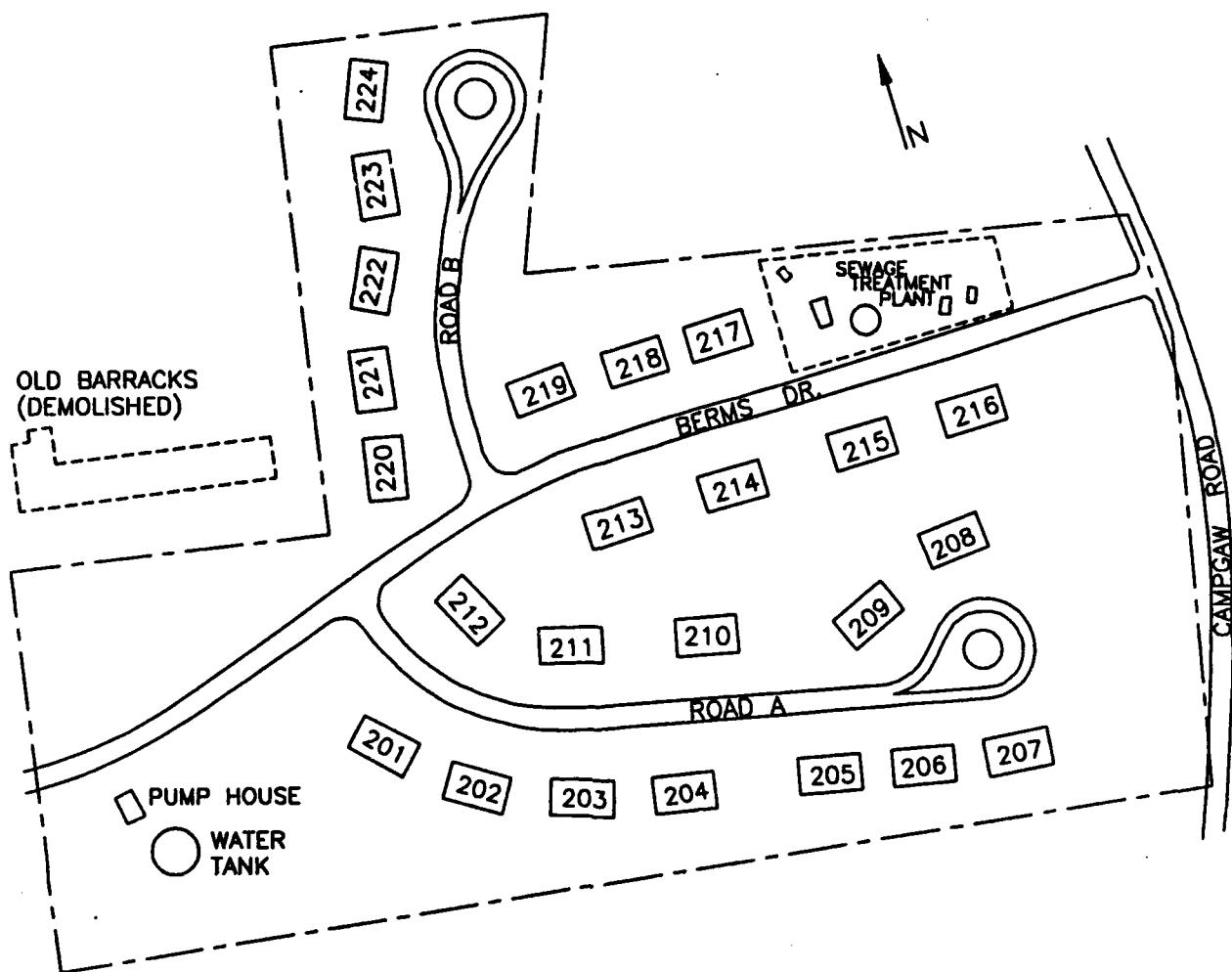


FIGURE 3 Site Plan Map of Franklin Lakes Army Housing Units

Sewage

Sewage treatment has been provided to the Franklin Lakes housing area since 1958 by means of an on-site plant. In all likelihood, the same facility provided sanitary sewage treatment service to the fire-control area when it was active, although no documentation could be found to confirm this past connection. Responsibility for providing this service has rested with the DEH at Fort Dix, and all sewage sludge has been transported to Fort Dix for disposal since initial construction.^{2,3} The DEH currently holds a New Jersey Pollutant Discharge Elimination System permit for the discharge from the treatment plant; because of increasing stringency of the permitted discharge limits, however, a contract for the connection of the wastewater lines in the Franklin Lakes housing area with the Mahwah Township municipal sewer system will soon be completed and the on-site treatment plant shut down.⁵⁻⁷ The current facility is located near the entrance to the housing area, at essentially the lowest topographic point on the property.

Fuel Storage

To the rear of each unit is an underground storage tank that holds 550 gallons of fuel oil for heating.² All tanks are original equipment, installed in 1958.² An additional 50-gallon tank to the rear of each unit supplies liquid propane for a gas-fired stove, oven, and water heater. These tanks are also original equipment, installed during the initial construction.²

Storm Drainage Systems

The area is drained by a small, intermittent stream that flows north through the property. This stream enters the Ramapo River approximately one mile from the housing area.

Other Permanent Structures or Property Improvements

In addition to the 24 housing units, a pumphouse, water tank, and wastewater treatment plant with associated underground lines were constructed and installed on the property in 1958.⁴ Other property improvements added at that time include paved roads and driveways, sidewalks, an overhead electrical distribution system, and a chain-link fence around the property.²

2.3 PROPERTY HISTORY

2.3.1 Nike Defense Program and Typical Battery-Level Practices

Generic information on the national Nike antiaircraft defense program has been compiled in two studies, one commissioned by the Army Corps of Engineers⁸ and the other by the U.S. Army Toxic and Hazardous Materials Agency.⁹ In both studies, independent contractors relied on information contained in unclassified documents related to the Nike surface-to-air missile program, including engineering drawings and specifications (for the facilities and the missiles themselves), interviews with Army personnel participating in the Nike program, and operations manuals and directives relating to the operations and maintenance of Nike facilities. Taken together, these two reports represent the most complete assemblage of generic information on the Nike missile program from an environmental perspective. Salient points from both reports are condensed below.

At its zenith in the early 1960s, the Nike program included 291 batteries located throughout the continental United States. The program was completely phased out by 1976, with many of the properties sold to private concerns or excessed to state or local governments for nominal fees.

Nike Ajax missiles were first deployed in 1954 at installations throughout the continental United States, replacing, or in some cases augmenting, conventional artillery

batteries and providing protection from aerial attack for strategic resources and population centers. Typically, Nike batteries were located in rural areas encircling the protected area. The Ajax was a two-stage missile using a solid-fuel booster rocket and a liquid-fuel sustainer motor to deliver a warhead to airborne targets.

The Ajax missile was gradually replaced by the Nike Hercules missile, introduced in 1958. Like the Ajax, the Hercules was a two-stage missile, but it differed from the Ajax in that its second stage was a solid-fuel rather than liquid-fuel power source and its payload often was a nuclear rather than conventional warhead. Ajax-to-Hercules conversions occurred between 1958 and 1961 and required little change in existing Nike battery facilities. A third-generation missile, the Zeus, was phased out during development and consequently was never deployed.

A typical Nike missile battery consisted of two distinct and separate operating units, the launch operations and the integrated fire control (IFC) operations. The two operating areas were separated by distances of less than two miles, with lines of sight between them for communications purposes. A third separate area was also sometimes part of the battery. This area was typically equidistant from the two battery operating sites and contained housing for married personnel assigned to the battery. Occasionally, these housing areas also contained battalion headquarters, which were responsible for a number of Nike batteries.

Depending on area characteristics and convenience, the housing areas were often reliant on the launch or IFC sites for utilities such as potable water, electrical power, and sewage treatment. In those instances, buried utility lines connected the housing area to one or both of the other battery properties. It is also possible, however, that housing areas were completely independent of the missile launcher and tracking operations. In those instances, the necessary utilities were either maintained on the housing site or purchased from the local community. In many localities, as the character of the land area around the housing units changed from rural to suburban or urban, communities extended utility services to the housing unit locations, in which case conversions from independent systems to community systems were made.

A large variety of wastes was associated with the operation and maintenance of Nike missile batteries. Normally encountered wastes included benzene, carbon tetrachloride, chromium and lead (contained in paints and protective coatings), petroleum hydrocarbons, perchloroethylene, toluene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and trichloroethylene. Because of the rural locations of these batteries, and also because very few regulatory controls existed at that time, most of these wastes were managed "on-site." (Unused rocket propellants and explosives, however, would always have been returned to central supply depots and not disposed of on-site.) It is further conceivable that wastes generated at one of the Nike properties may have been transferred to its companion property for management or disposal.

Wastes related to missile operation and maintenance would not have been purposely transferred from a battery operating area to a housing area with no facilities for waste management or disposal. In some instances, however, the sewage treatment facilities for all Nike battery properties were located at the housing area; that possibility cannot be automatically ignored. Finally, where housing areas received various utilities

from either of the operating areas, it is also possible that wastes disposed of on those other properties may have migrated to the housing area via the buried utility lines. And since decommissioning of the Nike batteries did not normally involve removal of buried utility or communication lines, any such contaminant migration is likely to have gone unnoticed.

2.3.2 Franklin Lakes Housing Units

The Franklin Lakes housing units were built in 1958 to provide stand-alone family housing for military personnel assigned to the Nike battery. Twenty-four single-family houses, a well, a pumphouse, water tank, and wastewater treatment plant were erected on the property. After decommissioning of the Nike battery in the early 1970s, the area has continued to be used for housing active-duty military personnel.

Since initial property development, no other permanent structures have been added, and none of the original structures has been razed. However, renovations have taken place. These include the replacement of kitchen cabinets in 1965; the replacement of sidings, exterior insulation, gutters, fascia, and splash blocks, and the painting of all exterior trim, in 1982; the replacement of windows, roofing, and storage sheds in 1985; and the replacement of flooring in units during change-of-tenant periods over the past 5 to 10 years.^{4-6,10}

2.4 ENVIRONMENTAL SETTING AND SURROUNDING LAND USE

The Franklin Lakes housing area is located in a hilly, predominantly wooded, sparsely developed area. The property is bounded on the east by Campgaw Road and on the south by the Campgaw Mountain County Reservation, which includes a recreational ski area.

The former Nike fire-control area lies west of the housing area; aerial photographs taken in March 1988 show an old barracks and several other structures standing on the old operational site of the battery.² During the site visit, it was observed that these structures had been demolished, apparently in preparation for further development of the area. This former fire-control area is currently owned by a residential developer, the High Debbie Hills Corporation.¹¹ The land to the north of the housing area is currently owned by another residential developer, Darlington Associates.¹¹

Interstate Rt. 287 is under construction along a route that passes just east of the housing area across Campgaw Road.

2.5 GEOLOGIC AND HYDROLOGIC SETTINGS¹²⁻¹⁴

The Franklin Lakes housing area is located near the boundary between the Triassic Lowland section of the Piedmont Physiographic Province and the New England Upland section of the New England Physiographic Province. In northern New Jersey, the

Triassic Lowland section of the Piedmont is characterized by generally low relief and a regional eastward slope. In this area, rocks of the Newark Group (shales and sandstones fractured by normal faulting) are interbedded with basalt flows and intruded by diabase dikes and sills. The New England Upland section of the New England Physiographic Province is a maturely dissected plateau that has been modified by glaciation and that has a regional southeastern slope. Steep slopes, granite monadnocks, and glacial features are common. The New England Upland section is underlain by folded, faulted, and metamorphosed Precambrian and Paleozoic sedimentary and volcanic rocks; it is intruded by granitic plutons and ring-dike complexes.

The Franklin Lakes housing area lies within that portion of New Jersey that was covered by glaciers during the most recent (Wisconsinan) glacial period. A variety of glacial deposits, both stratified and unstratified, are common throughout the area, but these deposits are highly variable in both thickness and location. One estimate gives the average glacial drift thickness in New England as approximately 16 feet.

Groundwater in the vicinity of the Franklin Lakes housing area is drawn primarily from the Triassic sandstones and shales of the Newark Group, although aquifers associated with glacial valley-fill deposits are also locally important in northern New Jersey. Aquifers in this area are commonly interconnected with surface water sources.

3 ENVIRONMENTALLY SIGNIFICANT OPERATIONS

3.1 UNDERGROUND FUEL-STORAGE TANKS

Each unit has a 550-gallon underground fuel oil tank behind the house with a fill pipe also located behind the house. Minor amounts of soil discoloration as well as stunted plant growth were observed near some of the fill pipes. Although no documentation was found that recorded failures or suspected leaks at any of these tanks, real property records show that they are original equipment and therefore more than 30 years old. Also, no indications were found to indicate that any type of corrosion-prevention measures were adopted when the tanks were installed. The potential for environmental risk resulting from leakage due to corroded tanks is significant.

3.2 TRANSFORMERS

Electrical service at the Franklin Lakes housing area is provided by a local public utility, but on-site transformers are the responsibility of the Army. No record of any inspection of these transformers for leakage or of any testing of their contents for the presence of PCBs was found. However, no evidence of spills or leaks was observed during the site visit.

3.3 ASBESTOS

The original floor tiles used in the Franklin Lakes houses are believed to contain asbestos. Although the old flooring has been systematically replaced over the past 5 to 10 years, whenever a change of tenant occurs, a few units may still have some of the original flooring.⁶ In addition, a flexible, woven sleeve connecting the furnace exhaust vent with a sheet metal vent leading to the chimney was found in unit #203. It is suspected that this sleeve, which was found to be in good condition, also contains asbestos.

3.4 UTILITY CONNECTIONS WITH FORMER FIRE-CONTROL AREA

Potable water and sewage-treatment service are provided on-site. Although documentation no longer exists to show any buried utility connections between the adjacent former fire-control area and the housing area, it is likely that these services were at one time provided to the fire-control area by the housing area facilities and that buried utility lines still exist. Since the former control area is topographically higher than the housing area, the possibility therefore exists that missile-related contaminants may have migrated along the old buried utility lines into the housing area.

4 KNOWN AND SUSPECTED RELEASES

No major releases or impacts to the environment are known to have occurred at the Franklin Lakes housing area. No hazardous wastes or other hazardous materials are stored on-site. No documentation of known or suspected releases from the underground fuel-storage tanks could be found.

Original floor tiles in the housing units may have contained asbestos. However, most of the floor tiles have been replaced in recent years with nonasbestos substitutes. There is no record of problems with deterioration of asbestos-containing tiles. It is unclear how many of the units may still contain their original floor tiles.

5 PRELIMINARY ASSESSMENT CONCLUSIONS

Although the housing area was originally developed to support a Nike missile battery, no Nike-related wastes were delivered to this property for management or disposal. However, since this property was in all likelihood connected with the adjacent fire control area by buried potable water and sewage lines, there is a possibility that Nike-related contaminants migrated along those buried lines to the housing area.

The original flooring material in these housing units may have contained asbestos. Although a program for the systematic replacement of the old flooring has been ongoing for several years, the possibility remains that the original flooring still exists in a few of the units. A flexible woven sleeve found attached to the furnace in one of the units may also contain asbestos. The sleeve was in good condition, however.

Real property records indicate that the original underground storage tanks for heating oil installed at each unit are still in service. Assuming an expected lifetime of approximately 20 to 25 years, these tanks should be considered at or near the end of their useful lives. Furthermore, since none of these tanks was installed with any type of corrosion protection, the likelihood of leakage from some of them is high. Since integrity testing has never been performed on any of these tanks, however, conclusive statements regarding releases of stored product from any of them are not possible.

Although electrical service is provided to the Franklin Lakes housing area by a local public utility, the on-site transformers are original equipment, installed when the housing units were built in 1958. The Army has been responsible for their inspection and maintenance from that time until the present. The presence of PCBs in these transformers has never been investigated, although such a project is currently under consideration; nor are the transformers routinely inspected for leakage, although no such leakage was apparent at the time of the site visit.

6 RECOMMENDATIONS

Because the original heating oil tanks remain underground at this property, and are assumed to be near or at the end of their expected useful lives, it is recommended that all underground tanks be removed and replaced with new tanks. It is also recommended that soils from all portions of the tank excavations be tested to identify any contamination present and that any problems encountered be remediated in an acceptable manner.

Electrical transformers on-site should be inspected for possible leakage. It is also recommended that all existing transformers and soils at the base of transformer poles be tested for the presence of PCBs, that the transformers be labeled as to their contents, and that any soil contamination found be remediated as required.

Since the housing area is probably connected by buried utility lines to land that was at one time part of the fire-control area of the Franklin Lakes Nike battery, it is recommended that the lines be located and that soil samples from along these lines be tested for the presence of missile-related contaminants.

The recommendations assume that this property will most likely continue to be used for residential housing.

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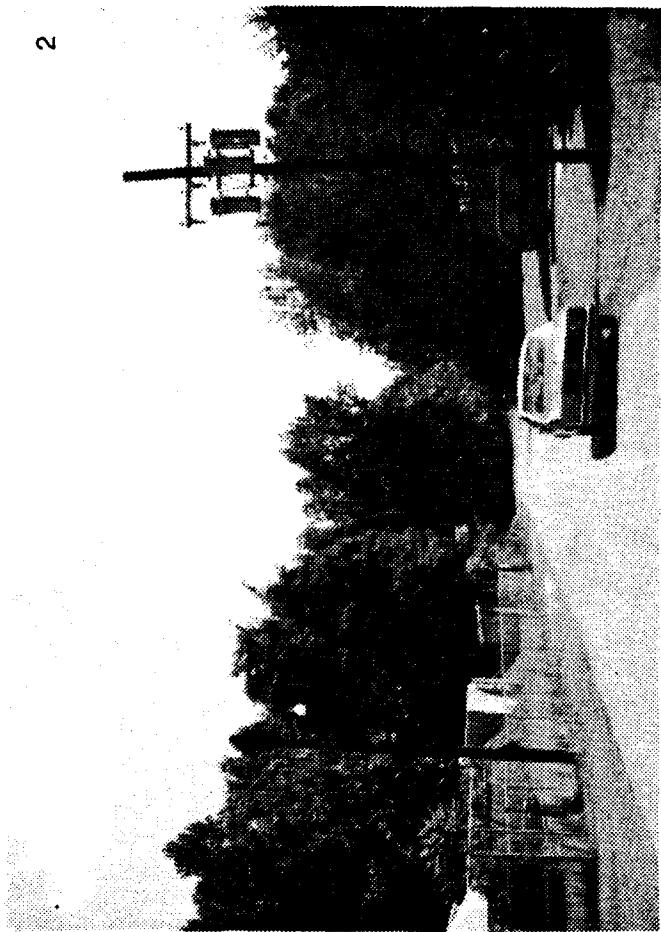
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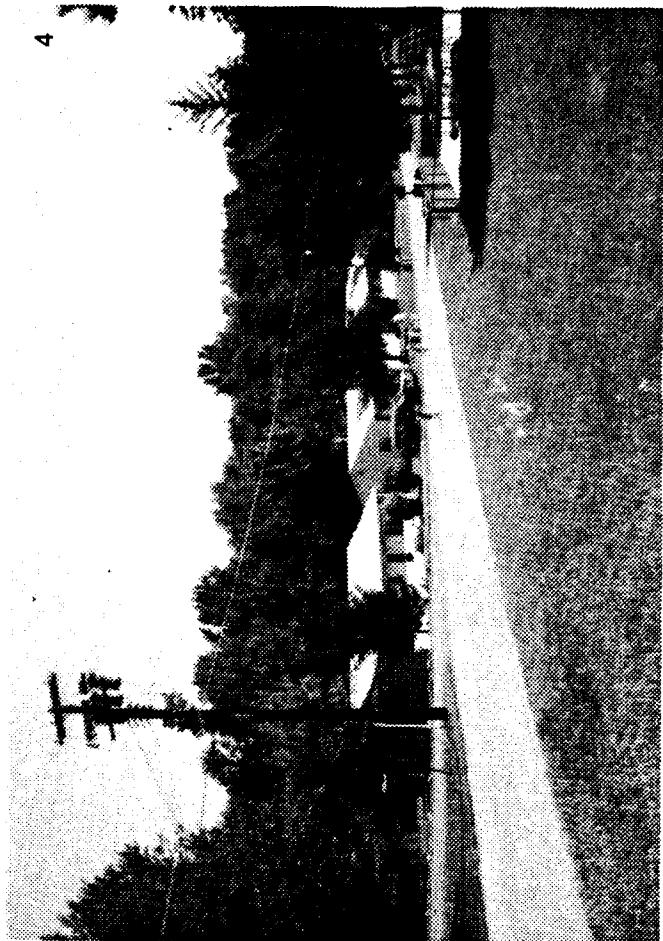
APPENDIX:

**PHOTOGRAPHS OF FRANKLIN LAKES HOUSING FACILITY
AND SURROUNDING LAND**

2



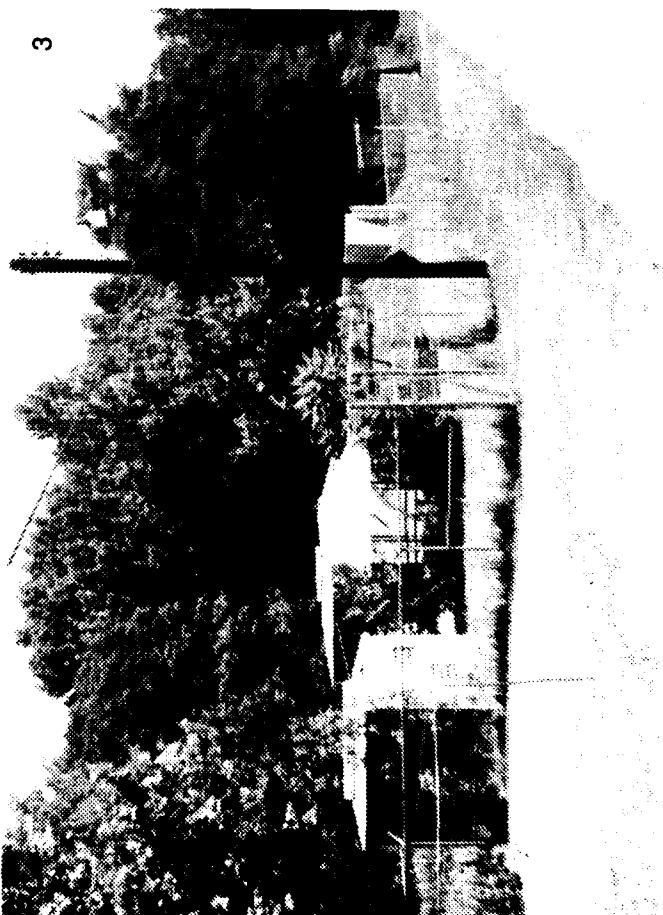
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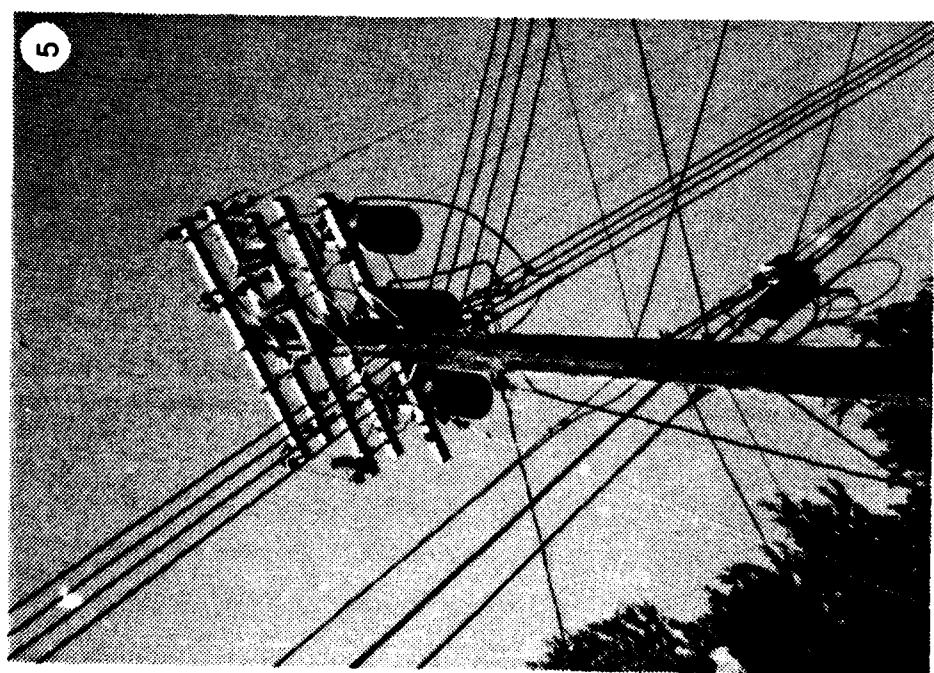
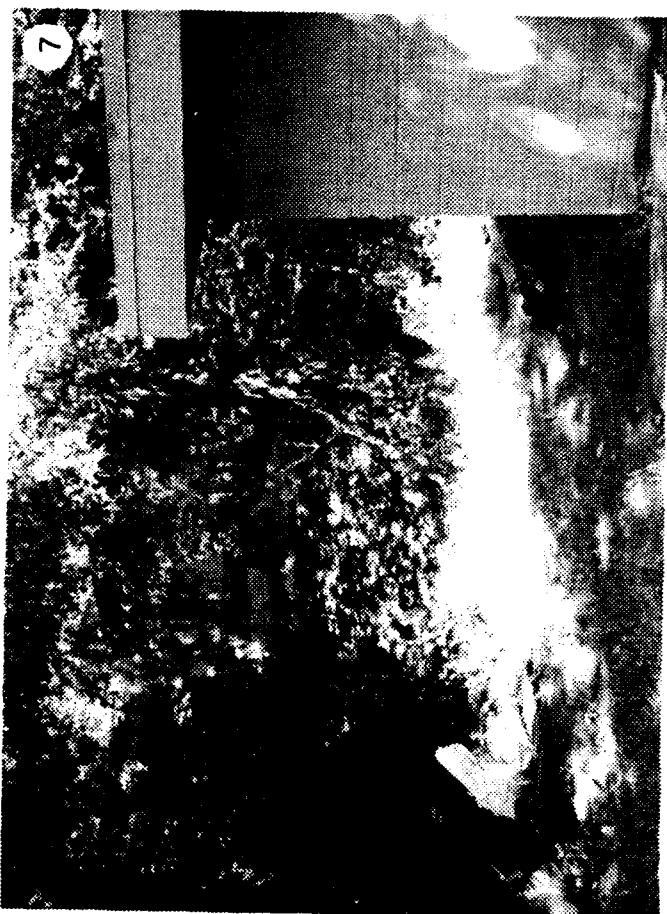
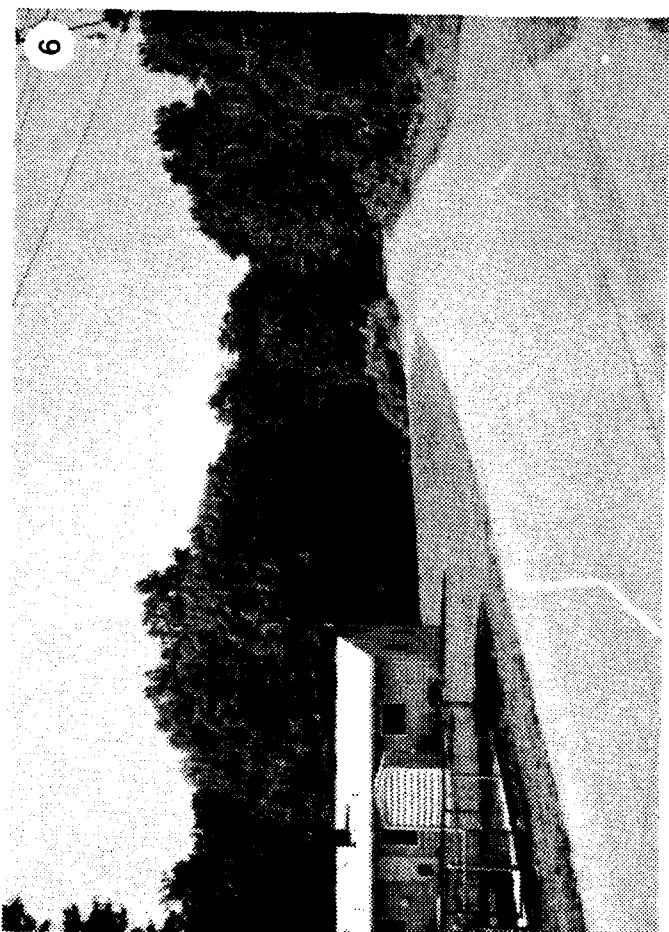


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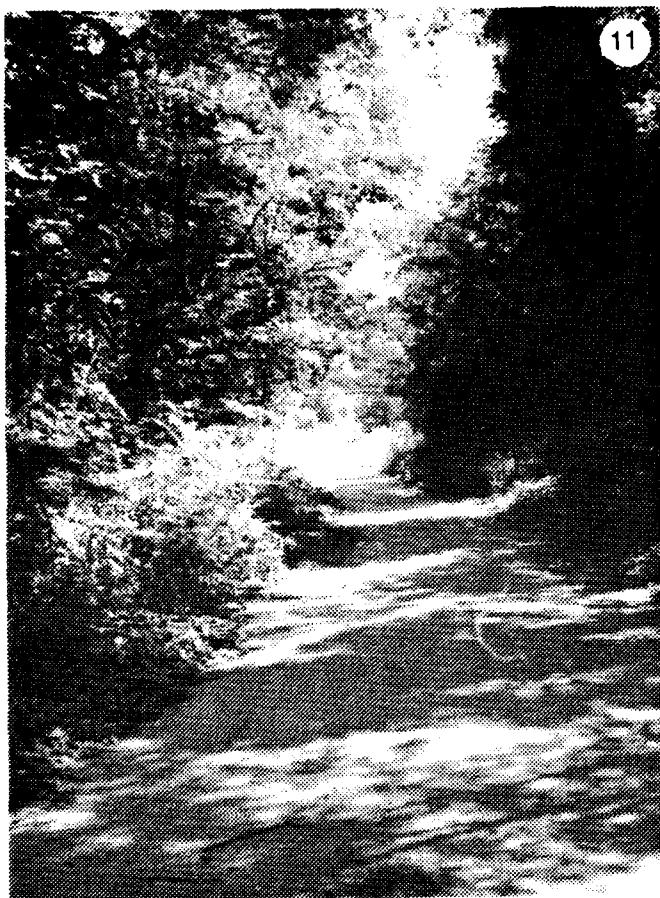


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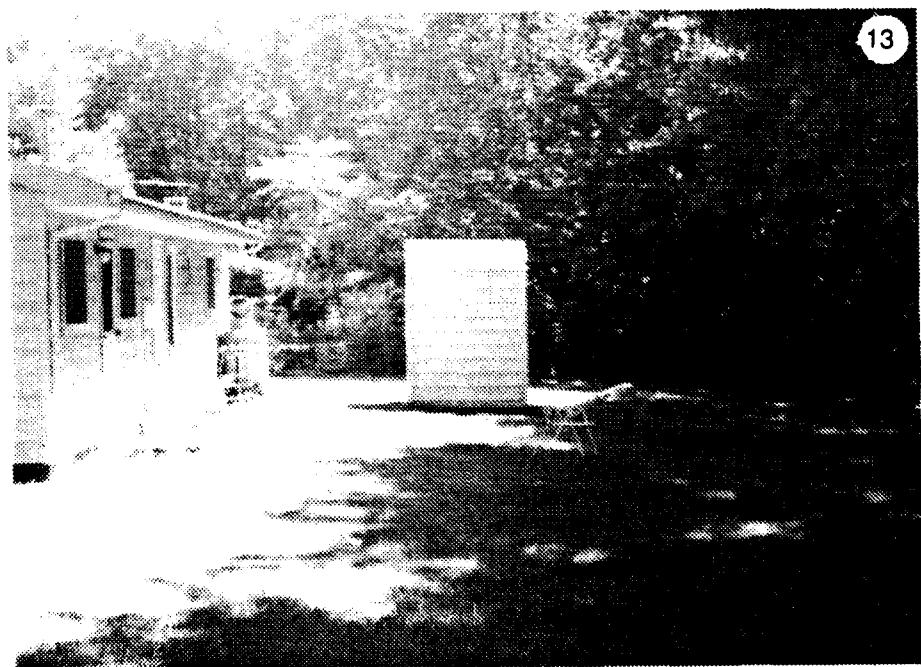




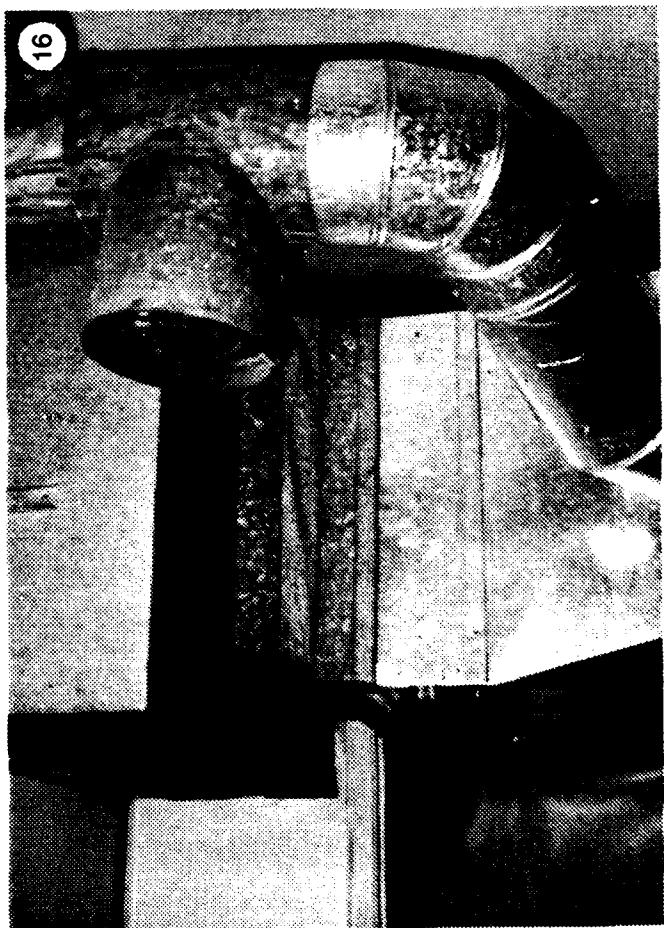
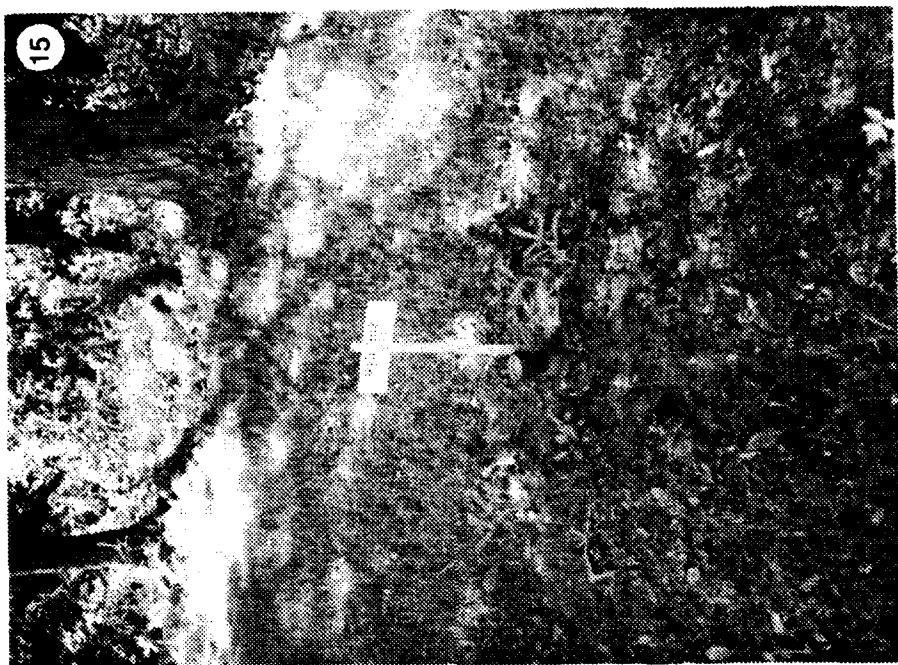
11



12



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18



17



IDENTIFICATIONS OF PHOTOGRAPHS

1. Entrance road, Franklin Lakes housing area.
2. View from the housing area looking toward the site entrance; sewage-treatment plant at left, utility pole with transformers atop it at right.
3. The sewage-treatment plant buildings are behind the chain link fence shown here.
4. Housing units on the street leading to the entrance to the site; transformers atop a utility pole.
5. Closer view of the three transformers; transformers are the property of the U.S. government.
6. Road leading to the water tank and pumphouse.
7. Access path to the pumphouse.
8. Pumphouse at left, water tank to right of pumphouse.
9. Electrical transformers atop a utility pole near pumphouse.
10. A row of houses at the site, with drainage ditch at right of house in the foreground; the drainage channel extends to and runs underneath the road.
11. View toward the houses from near the pumphouse.
12. Plant growth along side of a stream running through the middle of the property.
13. Back yard of a housing unit, showing the heavily wooded area that surrounds the site.
14. Back yard of another housing unit, showing liquid-propane tank (to left), storage shed (center) and fill pipe for the underground fuel-storage tank (to right).
15. Closer view of fill pipe of the underground storage tank.
16. The furnace inside one of the units; a flexible seal (center of view) may contain asbestos.

17. Entrance gate to the former fire-control area of the old Nike battery.
18. A view of the former fire-control area; rubble at right center is from the demolition of an old barracks building on the site; electrical transformers laying on the ground were also observed to left of the rubble.